

HERITAGE IMPACT ASSESSMENT

submitted in terms of section 38(8) of the National Heritage Resources Act

prepared for

NADESON Consulting Services

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DR 01655 Eden

Oudtshoorn – Eden District Municipality, Western Cape

Executive summary

Nadeson Consulting Services appointed *vidamemoria* to conduct a heritage impact assessment for a proposed borrow pit located along DR 01655 south of Oudtshoorn in the Eden District Municipality, Western Cape. *vidamemoria* appointed Dr John Almond (*Natura Viva CC*) to conduct necessary palaeontological specialist study and Madelon Tusenius (*Natura Viva CC*) to conduct necessary archaeological impact assessment. Heritage impact assessment is submitted for comment in terms of Section 38(8) of the NHRAct as a component of an Environmental Management Programme (EMProg in terms of Mineral and Petroleum Resources Development Act 49 of 2008) to be submitted to the Department of Mineral Resources (DMR).

Both the proposed borrow pits fall within the Gydo formation that elsewhere is well known for its rich fossil heritage from the Devonian Period. However, the Lower Bokkeveld sediments in the study area are highly folded and cleaved, so their palaeontological sensitivity is correspondingly very low. No further or mitigation are therefore recommended for these two borrow pit projects. No archaeological material was found in the actual affected areas of the proposed pits. However it is recommended that the adjacent cemetery be fenced off. No significant direct impact on archaeological heritage resources is expected if the proposed pits are developed. No further palaeontological and / or archaeological studies or mitigation are recommended.

1. Introduction

Nadeson Consulting Services on behalf of the WCPA: Department of Transport and Public Works appointed Quahnita Samie (*vidamemoria*) to conduct a Notification of Intent to Develop (NID) application in terms of Section 38(1) of the National Heritage Resources Act (Act 25 of 1999) for a proposed borrow pit at km's 5.2 and 7.8 along DR 01655 near Oudtshoorn, in the Eden District Municipality. NID dated 25 June 2012 was submitted to Heritage Western Cape (HWC) for consideration. Response dated 08 August 2012 (case ref 120726JL22E) requested 'a heritage impact assessment limited to archaeological scoping report and a palaeontological scoping report with an integrated set of recommendations is required' (Refer Annexure A). *vidamemoria* appointed Dr John Almond (*Natura Viva CC*) to conduct the necessary palaeontological specialist study (dated March 2013) and Madelon Tusenius (*Natura Viva CC*) to conduct necessary archaeological impact assessment (dated March 2013) under supervision of Dr Lita Webley (ACO Associates) as incorporated within this assessment.

The proposed action triggers Section 38(1) (c)(a) activity that will change the character of a site exceeding 5 000 m². This assessment report is submitted for comment in terms of Section 38(8) of the NHRAct as a component of an Environmental Management Programme (EMProg) in terms of the Mineral and Petroleum Resources Development Act (49 of 2008) to be submitted to the Department of Mineral Resources (DMR). Notification as previously submitted to HWC (dated 31 May 2011) and response (dated 20 June 2011) confirmed the approach to be undertaken in submitting borrow pit notifications to HWC.

Structure of assessment

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| Annexure E | Archaeological conducted by Madelon Tusenius, <i>Natura Viva CC</i> (March 2013) | |

Site location and description

Potential source of a wearing coarse gravel pits are located along DR1665 to the south of Oudtshoorn, Eden District Municipality, Western Cape. **DR01655/5.8/0.2L** located on Farm Kleindoornrivier and pit **DR01655/17.2/0 R** on the Farm Grootdoornrivier are to be excavated into mudrock-dominated bedrocks of Gydo Formation. Vegetation consists of Undisturbed Klein Karoo Renosterveld fynbos and surrounding context is characterized by rough grazing. Sites are in private ownership of C.J. Strydom and co-ordinates at km 5.8 are 33° 44' 44.4"S, 22° 32' 30.4" E and at km 17.2 33° 47' 34.7"S, 22° 15' 11.4" E

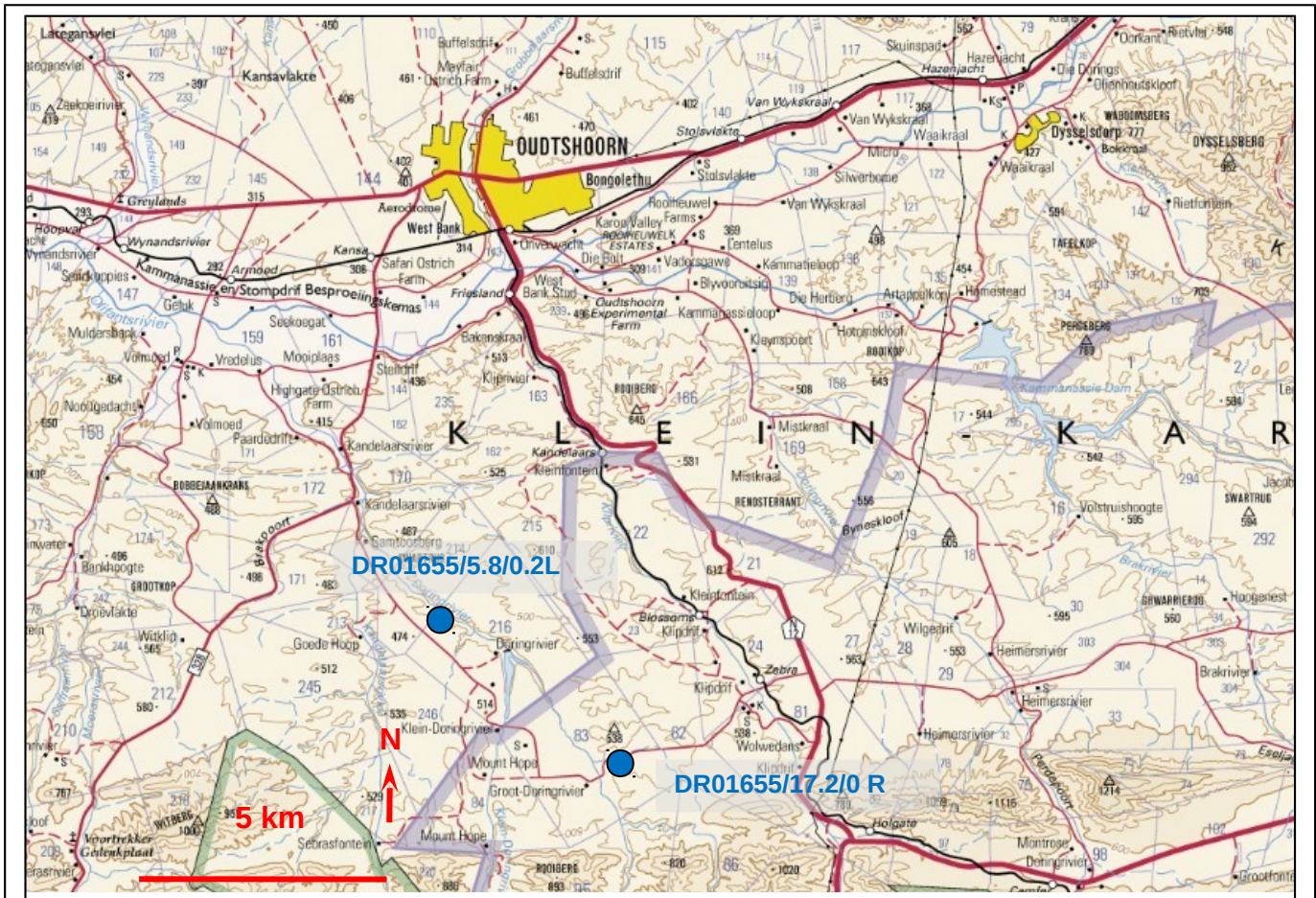


Figure 1: Extract from topographical sheet 3322 Oudtshoorn (extracted Almond 2013: 2)



Figure 2: At km 5.8 view across the affected area towards the floodplain of the Grootdoring River and farm buildings towards the west (Tusenius 2013: 9)

Figure 3: At km 17.2 view towards the northeast taken from the slope of the hill (Tusenius 2013: 7)



Figure 4: Aerial view of proposed borrow pit location (Google earth image, February 2013)

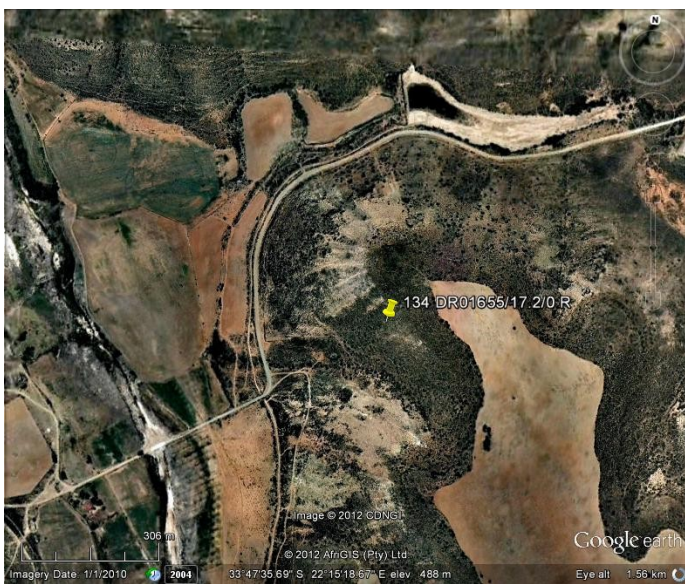


Figure 5: At km 5.8 aerial view of proposed borrow pit area (Google earth image, February 2013)

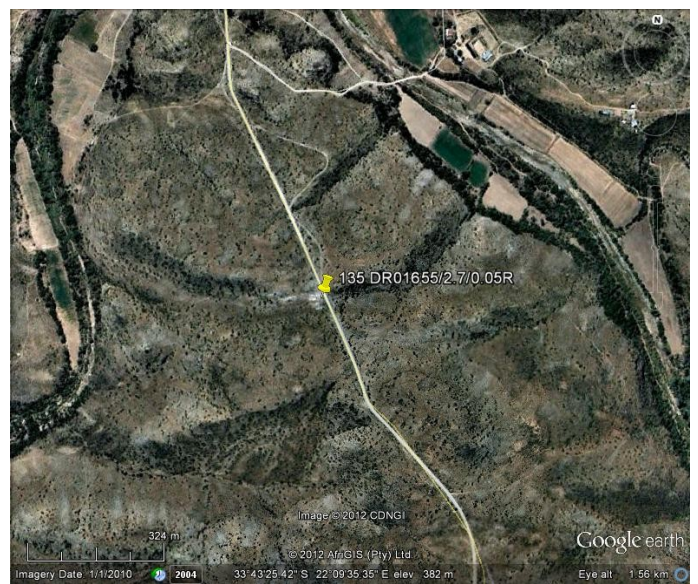


Figure 6: At km 17.2 aerial view of proposed borrow pit area (Google earth image, February 2013)

Description of proposals

In terms of the Minerals and Petroleum Resources Development Act, all mining activities including extraction of material from borrow pits and quarries requires authorisation from the Department of Mineral Resources (DMR). Where the WCPA: Dept Transport and Public Works is undertaking the maintenance and / or upgrading of roads under its control, no application needs to be submitted for a mining right or permit, however, as per provisions of Section 106(2) of the MPRDA, they are required to prepare and submit an EMProg to DMR for their approval prior to the extraction of any material from a proposed borrow pit or quarry. According to the MPRDA, mineral resources are in the custodianship of the State, where WCPA would temporarily acquire the right to mine the borrow pits, subject to approval by the DMR.

For a gravel road to be able to carry traffic safely and effectively an upper layer of gravel known as a wearing course, which meets specific technical requirements, has to be placed on the prepared roadbed. With time, the wearing course is eroded away by both traffic and the elements. This wearing course needs to be replaced in order to continue to deliver a safe and functional surface to road users. Implementation of regravelling activities requires extraction of suitable materials from identified material sources. During decommissioning, working areas are rehabilitated and revegetated. Material excavated from borrow pit located at **km 5.8 and 17.2 along DR 01655** will be used for the re-gravelling so as to benefit road users in terms of road safety and user economy as well as to minimise maintenance-related disruptions.

| Summary of borrow pit | | |
|-------------------------------------|----------------------------------------------------------|----------------------------------------------------------|
| | At km 5.8 | At km 17.2 |
| Expropriation area | 17 000 m ² | 17 000 m ² |
| Borrow pit | 15 000 m ² | 16 000 m ² |
| Maximum depth | 5 m | 5 m |
| Material description | Fine-to-medium gravelly silty fine sand (residual shale) | Fine-to-medium gravelly silty fine sand (residual shale) |
| Proposed usage after rehabilitation | Stock-watering feature | Revegetation |
| Volume of material to be sourced | 70 000 m ³ | 100 000 m ³ |

Trial pit investigations and sampling were conducted at four proposed borrow pits considered as potential sources of material.

Two were however excluded from consideration due to environmental concerns and / or unsuitability of material for purpose of regravelling.

The mine plan outlining extent of borrow pit and mining is attached as Annexure B. Methodology for the preparation, operation and closure of borrow pit is outlined in Annexure C.

Eden District Municipality is to undertake work on behalf of the WCPA. Formal agreements are to be entered into between the landowner and the WCPA, with the municipality managing the site until decommissioning and closure. During decommissioning, the working area will be rehabilitated and revegetated as per the approach outlined in the mining plan. WCPA's liability for the site persists until such time as a Closure Certificate has been issued by the DMR.

Results of consultation

DMR has outlined requirements for public participation in terms of the Minerals and Petroleum Resources Development Act (Act 28 of 2002) for exempted organs of state. This includes liaison with the landowner, notification of the immediate neighbours and either an on-site advertisement or advertisement in the local newspaper. The WCPA has indicated a commitment to developing and maintaining good relations with landowners and therefore landowners concerns are incorporated into the final agreement.

The public consultation process for this project has involved consultation with the landowners and neighbours, and the advertising of the proposed activity in the local newspaper.

No heritage related comments and / or concerns were received.

Requests / concerns of owner:

- **At km 17.2** Gravel should be made available for upgrading of the farm access tracks. @ DR01665/17.2
- **At km 5.8** work should be carried out according to applicable legislation

2. Heritage resources

Identification of heritage resources

Proposed site and immediate context do not fall within conservation or protected heritage areas, and is not located near to or visible from any protected heritage sites. The site does not fall within a historical settlement or townscape and does not contribute towards rural or natural landscape of cultural significance. The site is therefore not considered as an integral component of the cultural landscape.

Dr John Almond conducted a palaeontological field assessment and provided a report outlining geological context, palaeontological heritage and palaeontological sensitivity. Both the proposed borrow pits are to be excavated into mudrock-dominated bedrocks of the Gydo Formation that elsewhere is well known for its rich fossil heritage especially shelly invertebrates from the Devonian Period. However, the Lower Bokkeveld sediments in the study area are highly folded and cleaved, so their palaeontological sensitivity is correspondingly very low. At km 17.2 material is mantled by semi-consolidated colluvial gravels reworked from an adjacent pediment surface. These gravels are largely unfossiliferous (Almond 2012: 7).

Madelon Tusenius conducted archaeological field assessment and provided report identifying and assessing archaeological resources, associated impact, assessment of significance and recommendations regarding any mitigation required. Although no archaeological material was found in the actual affected areas of the proposed pits some heritage remains, namely a cemetery and a few stone artefacts, were observed in the vicinity of the sites. The stone artefacts found close to borrow pit at km 5.8 are in a secondary context (Tusenius 2012: 2)

The site has no known historical, social, or spiritual significance. No built environment issues and / or cultural landscape issues have been identified. No further heritage resources were identified.

Heritage significance

A previous desktop basic assessment of the two pit sites by the author assessed their palaeontological heritage sensitivity as high due to the presence of potentially fossiliferous mudrocks of the Gydo Formation (Lower Bokkeveld Group). However, the Lower Bokkeveld sediments in the study area are highly folded and cleaved, so their palaeontological sensitivity is correspondingly very low.

The stone artefacts found close to borrow pit at km 5.8 are in a secondary context and are therefore of low archaeological heritage significance. The cemetery situated close to the area of proposed borrow pit at km 17.2 is of high significance and should be protected (Tusenius 2013: 10)

Heritage indicators

Heritage indicators identified aim to ensure that significance would not be adversely impacted on by the proposed development. Indicators concern impact on the cultural landscape, identified heritage resources and visual impact. No sensitive landscapes and material of significance were identified.

3. Assessment of impacts

An assessment of the potential development impacts on significance is undertaken using relevant assessment criteria as well as response to indicators. Assessment of impacts on palaeontological significance has been provided as well as consideration of the cultural landscape and assessment of cumulative impacts.

Cultural landscape: Proposed borrow pits would not result in a negative impact on the cultural landscape. The site and its immediate context are considered as being of low heritage significance. No heritage resources will be impacted and the overall status of the impact is considered as low.

Archaeological and palaeontological impact: No impact on archaeological resources would occur as a result of proposed borrow pits.

Visual impact: Low intensity visual impact is limited to the immediate surroundings and will be limited to operational phase. Any potential visual impact at proposed borrow pit km 17.2 as the intention is to recreate the existing vegetated landscape at a slightly lower elevation than at present. In addition, a small stock watering feature could be created in the proposed borrow pit floor at its downslope end should the owner request such feature.

Cumulative impact: The proposed moderate intensity intervention lies within a disturbed context with degraded conditions. No new roads would have to be constructed as the borrow pit is accessed directly off main / divisional roads or via existing access tracks. The borrow pit and access tracks would be fenced for the duration of the mining activities. There will be no site buildings located at the borrow pit site. No long-term traffic increase will be experienced. Low impact is associated with impact of increased personnel and cumulative impacts on borrow pit footprint and surroundings.

Site rehabilitation: It is expected that there should be an acceptable seed bank in the topsoil and this would be kept aside for rehabilitation. **At km 5.8** the intention is to recreate the existing vegetated landscape and a stock-watering feature at a slightly lower elevation than at present. Therefore, stockpiled topsoil should be carefully redistributed over worked out areas, during and after the completion of any one phase of exploitation of the resources. **At km 17.8** The intention is to recreate the existing vegetated landscape at a slightly lower elevation than at present. Therefore, stockpiled topsoil should be carefully redistributed over worked out areas, during and after the completion of any one phase of exploitation of the resources in this pit, as described in the above sub-section. A small stock watering feature could be created in the proposed borrow pit floor at its downslope end should the owner request such feature.

Impact relative to sustainable social and economic benefits: The project will result in social and economic benefits for the local community in terms of service provision and employment opportunities.

4. Discussion

During the course of borrow pit excavations, operations should be planned in such a way that the amount of work that will be necessary for the finishing off of the borrow pit is reduced as far as possible. Indiscriminate excavation without due regard for the desired final shape of the borrow pit should not be permitted and should be rectified immediately. Timing of rehabilitation is important as rehabilitation of disturbed areas should ideally be programmed to occur as soon as practically possible following cessation of work in a specific area. The period between cessation of activities associated with mining of materials and the onset of rehabilitation for that area should ideally not exceed 1 month. Rehabilitation operations should ideally be conducted in parallel with extraction. Accordingly, progressive rehabilitation, in which depleted sections of a borrow pit are reclaimed while extraction is ongoing in other sections of the same pit is encouraged.

Site development, operation, mining and closure guidelines outlined with the Environmental Management Programme provides detailed guidance for the preparation, operation and decommissioning of the site. Rehabilitation of old and current working faces has been undertaken to mitigate visual impact to road users. Measures outlined should be adhered to in order to minimise potential negative impacts. It is recommended within the EMProg that an environmental control officer or suitable experienced engineer monitors the preparation, operational and decommissioning of the borrow pit so as to ensure that mitigation and rehabilitation measures are adhered to.

Although no archaeological material was found in the actual affected areas of the proposed pits some heritage remains, namely a cemetery and a few stone artefacts were observed in the vicinity of the sites. It is recommended that the graves be fenced off and declared strictly off-limits to personnel involved with the proposed quarrying activities. No significant direct impact on archaeological heritage resources is expected if the proposed pits are developed. No further archaeological studies or mitigation are recommended (Tusenius 2012: 10 – 11).

Any potential visual impact at proposed borrow pit km 17.2 as the intention is to recreate the existing vegetated landscape at a slightly lower elevation than at present. In addition, a small stock watering feature could be created in the proposed borrow pit floor at its downslope end should the owner request such feature.

Both the proposed borrow pits are to be excavated into mudrock-dominated bedrocks of the Gydo Formation that elsewhere is well known for its rich fossil heritage especially shelly invertebrates from the Devonian Period. However, the Lower Bokkeveld sediments in the study area are highly folded and cleaved, so their palaeontological sensitivity is correspondingly very low. No further palaeontological heritage studies or mitigation are therefore recommended for these two borrow pit projects.

Recommendations

It is therefore recommended that:

1. proposed borrow pit be supported
2. recommended that the graves be fenced off and declared strictly off-limits to personnel involved with the proposed quarrying activities
3. comment be issued that proposed activity may proceed in terms of Section 38(8) of the NHRAct

References:

- Almond John E PhD (March 2013): *Palaeontological specialist study: field assessment & recommendation for exemption from further studies & mitigation*
- ASAPA Aggregate and Sand Producers Association of Southern Africa (30 September 2009): *The issue of borrow pits being used in the aggregate and sand industry* accessed online
- Aurecon / Nadeson JV (July 2011): *Draft environmental management programme, summary report and mine plan*
- Galliers R M (July 2011): *Geotechnical investigations and geological strategic gravel pit summary report* for Aurecon South Africa
- Heritage Western Cape (July 2007): *Minimum Standards For Phase 1 Archaeological Impact Assessment (Aia) Reports*
- Tusenius M (August 2012): *Archaeological Impact Assessment*
- vidamemoria (March 2013): *Notification of Intent to Develop*